



A Study on Supporting Factors of Digital Workplace Diffusion in Public Sector

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Abstract. Digital workplace has become the working evolution in today's workplace. People nowadays tend to do job virtually compared to conventional. This is due to the fact that the people and the things around them can be linked, and shared information as well as helping in making a decision by using advanced technology tools. For organization, as the customers' expectations growing, workforce and work culture changes along with the growth, demographic shift, information overload as well as the usage of advanced technologies tools take place, employees will find a way to empower by ensuring that all the information and tools they need are at their fingertips, for them to share, collaborate and do jobs effectively and even to make decision in the workplace. This research focuses on literature in workplace, digital workplace and elements of digital workplace. We also performed a preliminary study on digital workplace, through interviewing selected respondents from different agencies in public sector and private sector, based on their job position, work experience and area of work. The result of the research identified that, supporting factors for digital workplace diffusion in public sector are advanced technologies tools, that consist of social technologies tools, contextual intelligence tools, mobility and communication infrastructure. Whereas other supporting factors are top management support and skilled/talented employees in the organization. These findings can be a basis of research for researchers and practitioners to further examine digital workplace in public sector.

Keywords: Digital workplace · Internet of Things (IoT)
Artificial Intelligence (AI) · Digital era · Collaboration
Advanced technology tools

1 Introduction

We are now in a digital era, in which innovation is driven by enabling technologies, such as Internet of Things (IoT), Artificial Intelligence (AI), and Big Data. These technologies are not only capable of becoming linked, searched, shared and analyzed information or data via Internet, but also will be able to balance economic development, as well as solving social issues. The Society 5.0 was introduced by Japan in the 5th Science and Technology Basic Plan, in which a definition as a human-centered society that balances economic advancement with the resolution of social problems by a system that is highly integrated to cyberspace and physical space [1]. Society 5.0

create new value-added through innovation, that will eliminate regional, age, gender, and language gaps and that enables the provision of products and services properly tailored to diverse individual needs and latent needs with the use of technology advancement [1]. Human beings do no longer make decision based on information given, but AI helps in providing fed back to human being in physical space in many forms. In this way, it will be possible to achieve a society that can both promote economic development and find lasting solutions to social problems.

Malaysia has come out of an initiative of economic development, citizen well-being and innovation through introduction of ‘Transformasi Nasional 2050’ or TN50 plan. In this plan, technology AI, and IoT are being identified as the technology enabler to drive Malaysia into the digital future [1]. Through the use of advanced technologies, nature of work is changing, creating a world in which we work side-by-side with machine. For public sector, Information Technology and Communication (ICT) have been adopted in the workplace since Malaysia launched the Multimedia Super Corridor (MSC) in 1996, It was formed as a major strategy to improve delivery services in the government agencies. The use of technology in the workplace such as web-based applications, electronic forms, workflow management, and electronic document management has revolutionized the way Malaysian employee work. It has led to increase in transparency and play an important role in helping government to attain new levels of service effectiveness and efficiency.

This paper focuses on literature in workplace, digital workplace as well as elements of digital workplace. Besides that, we also identified the supporting factors of digital workplace diffusion in public service, through performing a preliminary study on a workplace through interviewing selected respondents from different agencies-public sector and private sector based on their job position, work experience and area of work.

2 Literature Review: Workplace and Digital Workplace

A workplace is a location, where an employee works for his or her employer or a place of employment where people perform their jobs. According to Serhan, the work environment or workplace is defined as a physical location where somebody works, such a place can be ranged from a home, office to a large office building or company [2]. Jackson and Suomi defined workplace as one of the most important space other than the home, establishing “a central concept for a number of things; the worker and his/her family, the employing organization, the customers of the organization, and the society as a whole” [3].

However, nowadays, workplace has become a bit complex, especially in today’s knowledge economy. With the advancement of technologies, employers are no longer expected to always provide a workplace for the employees. Employers believed that, employees can work based on virtual workplace or digital workplace, a workplace that is not specifically located in a physical place. Through digital workplace, employees operate remotely from each other and this will become common in the future [4]. Digital workplace environment concept believed can improve employees’ performances [5], agility [5], productivity [5] as well as work-life balance [6]. Digital work place is also not about where we work but how we work [7]. Recent transformations in the nature of employment, due to a series of demographic, organizational and

technological factors have played a catalytic role [8]. The digital workplace is where people, technology, and the workplace converge to improve agility, productivity, and engagement [9]. This future workplace is largely expected to transform into a smart and connected network, that will facilitate remote work styles [10].

In that sense, office will no longer be considered as a place that you travel to, because digital workplace will not be confined to physical boundaries as one is seeing today. Deloitte has defined the digital workplace encompasses all the technologies people use to get work done in today's workplace, both the ones in operation and the ones that have not been implemented and it ranges from Human Resource applications and core business applications to e-mail, instant messaging and enterprise social media tools and virtual meeting tool [11]. This environment enables employees to find the same type of consumer-oriented experiences, they enjoy in their personal lives, with one-stop shopping for the technology tools to do their work more effectively and effortlessly. Digital workplace is built around employees with computer and Internet access [12]. According to Garner, the digital workplace enables new, more effective ways of working, raise employee engagement and agility; and exploits consumer-oriented styles and technologies [13]. Tubb, one of the members of Digital Workplace Group mentioned that, digital workplace as "The collection of all the digital tools provided by an organization to allow its employees to do their jobs" [14]. Another definition of the digital workplace is the virtual, digital equivalent of the physical workplace [15]. Actually, there is no precise definition because the term digital workplace is still evolving. Currently, the concept of digital workplace can be defined as an ecosystem of work, where advanced tools in technology and intelligent context help employees to work in a mobile/virtual workplace environment, in order to complete task with consistent experiences across different devices and locations.

According to previous research and preliminary interviews, a digital workplace concept consists of social technologies tools, contextual intelligence tools, communication infrastructure and mobility (see Fig. 1). Social technologies tools used in digital workplace are specific social purposes tools. The tool that can improve employees productivity, collaboration, and communication within the organization [16]. The tools also allow employees to find, process and share information when needed. Meanwhile, contextual intelligence tool refers to a practical application of knowledge and information to the real world situations. This advanced tool helps employees in searching, analyzing information as well as assisting in making decisions, based on information given within the time frame [17]. Social technologies tools and contextual intelligence tools are essential elements, as it related to each other in assisting employees to get the job done (see Table 1). According to previous research, the social and contextual components of the work environment that have been found to influence the occurrence of creativity [18]. With the creativity, employees would create a new way of innovation in the working environment. Besides that, digital workplace concept concerns on employees working in a different location, therefore, mobility is required as it allows employees to collaborate and share information, wherever they may be through the communication infrastructure. Mobility refers to enabling employees to access tools away from the physical office or workplace [11]. The last element of digital workplace is communication infrastructure. Communication infrastructure refers to the backbone of the communications system. In this case, a digital workplace concept uses network

infrastructure as a medium to transmit data or information. Strong network connectivity remains a crucial requirement, in the digital workplace, both in the office and on the road, as to ensure that, the communications technologies, business and collaboration applications are functioning effectively [19].

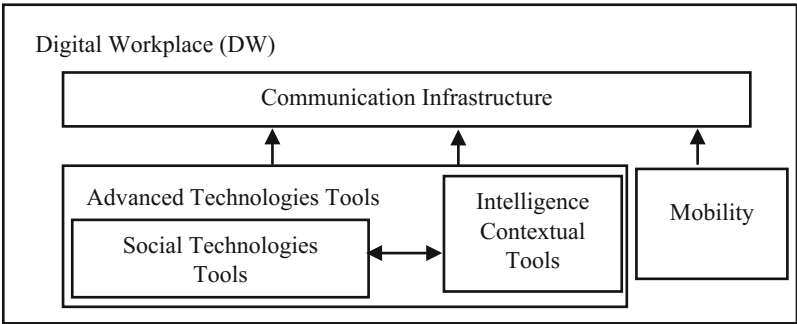


Fig. 1. Elements of digital workplace.

Table 1. List of advanced technologies tools for digital workplace.

Social technologies tools	Description	Intelligent contextual tools	Description
Microsoft Office 365 https://www.office.com/	Office applications plus other productivity services (OneNote, SharePoint, OneDrive and Microsoft Teams) that are enabled over the Internet. It can install them on multiple devices, including PCs, Macs, Android tablets, Android phones, iPad, and iPhone	Decision support tools https://www.gridspace.com/	A tool which combines new techniques in the fields of speech recognition, natural language processing, and artificial intelligence, turns conversational interactions into structured business data
Slack https://slack.com/	Slack is a cloud-based set of communication, tools, collaboration tools and workflow services	Data analytics tools https://analytics.google.com	A Google service that track, reports website traffic and analyze the customer data
Workplace Facebook https://www.facebook.com/workplace	Workplace is a collaborative platform run by Facebook, Inc. It used to communicate via groups, to chat with colleagues and offers the social networks features in a corporate environment	Search engines tools www.google.com www.yahoo.com www.bing.com	A tool designed to search for real-time information on the World Wide Web using algorithm

(continued)

Table 1. (continued)

Social technologies tools	Description	Intelligent contextual tools	Description
Google G-Suite https://gsuite.google.com/	A Google product where cloud computing, productivity and collaboration tools are used for business purpose		
WorkDo https://portal.workdo.co/	WorkDo is an application specifically designed to simplify team communication and enhance work efficiency suitable for small to medium size companies to accurately and effectively manage information		
Zoho https://www.zoho.com/	Zoho is online productivity tools and SaaS applications. Tools available are Customer Relation Management (CRM), workplace, finance, Information Technology management, collaboration, human resource		

3 Preliminary Study

A preliminary study has been done that involved respondents from the public sector and the private sector. Eight respondents have been selected for this study. From public sector - Human Resource Department, Intellectual Property Corporation of Malaysia (MyIPO), Information Technology Division, Department of Insolvency, Legal Affairs Division, Prime Minister's Department, ICT Consulting Division, MAMPU, Project Management Unit, Health Works Branch, Public Works Department, National Key Result Area (NKRA) Unit, Ministry of Women, Family and Community Development, while private sector respondents are from SEMNET Pte. Ltd, 10infinity Sdn. Bhd, Telekom Malaysia (TM) Berhad. The respondents were chosen based on their job positions, areas of work and work experiences. For this study, method of gathering information was through performing interviews (see Table 2). The aim of the interviews is to get ideas/views on what is digital workplace and to identify supporting factors towards digital workplace diffusion in public sector.

Table 2. List of questions.

	Questions
Q1	Do you know about digital workplace?
Q2	Do your organization practicing digital workplace?
Q3	What are the challenges in delivery service for the government?
Q4	What do you expect of a new way of working environment?
Q5	What are the other factors of digital workplace diffusion in public sector?

4 Research Methodology

Research methodology is a study about the methodology deployed in the research. For this study, method to gather information was through interviews. Interviews are a qualitative technique that involves a small number of respondents to explore their perspectives on a particular idea/view. In this research, the interview was done through unstructured means of interviews. Five questions had been asked during the interviews. The purpose of performing interviews was to get information on respondents experience, opinion and issues on digital workplace concept as well as to identify supporting factors towards digital workplace diffusion in public sector. The finding from the interviews can be a basis for further research for researchers and practitioners to further examine digital workplace in public sector.

5 Result and Discussion

5.1 Q1: Do You Know About the Digital Workplace?

From the interview, the researcher found that, since the term digital workplace was new, only a few respondents knew about the phenomena in public sector, compared to the private sector, they knew and had already implemented in the organization. They believed that through the practice of this working environment, digital workplace enables them to connect, communicate and collaborate in mobility and flexibility, without necessarily being together face to face. They believed that, by using digital workplace concept in an organization, it will allow them to response and work fast.

5.2 Q2: Do Your Organization Practicing Digital Workplace?

Based on the respondents, all private sectors are practicing the digital workplace concept, while for public sector, only MyIPO is practicing digital workplace in their organization, where employees are given the opportunity to work from home/telecommuting. The facility that organization provides is based on working culture, as well as working position. The reason for the organization implementing digital workplace is to allow flexibility for the employees that wanted the concept of work-life balance situation, as well as to avoid road congestion. Besides that, another key reason is for organization to control the increasing overhead cost of operation, organization to be able to cut off budget on renting a working space and office

equipment. Meanwhile, other public sectors are still not practicing digital workplace as there is an issue of monitoring performance.

5.3 Q3: What Are Challenges in Delivery Service for the Government?

Furthermore, from the interview the researcher discovered that, challenges that public sector faced are that, as the expectation of customers is growing up, public service performance is very determined, by response of customers. In line with complex customers' expectations and personalization of services are essential for governments, to have a better understanding of the needs of citizens and communities, and to ensure that services are tailored towards the needs of people, who are using them. Besides that, due to geographical borderless, respondents claimed that, the demarcation between work and personal lives employees becomes less visible and gradually disappears. The distinction becomes increasingly intangible.

5.4 Q4: What Do You Expect of a New Way of Working Environment?

Respondents are expected that, the new way of working environment can leverage telecommunication infrastructure, digital technology, ICT info structure and infrastructure, data analytics and social media that enable employees to perform their jobs at anytime and anywhere. In this case, respondents agreed that, a digital workplace concept must consist of advanced technologies tools, communication infrastructure and mobility elements. The advanced technologies tools consist of social technologies tools and contextual intelligence. The tools must support each other, as it can enable employees to find, process, analyze, collaborate, share information and help them in making decision faster when needed. Meanwhile, mobility is where employees can work anywhere and stay connected. This can be done through the usage of mobile technologies such as smart phone, laptop and tablet. Finally, communication infrastructure is a very important element in the digital workplace, as it ensures that, the advanced technologies tools and mobility elements functioning effectively. Therefore, a strong and stable backbone of communication infrastructure is required to support the digital workplace environment.

5.5 Q5: What Are the Other Factors of Digital Workplace Diffusion in Public Sector?

Skilled/talented employees and support from the management are identified as tool that can help the success in implementing digital workplace concept in the organization. Skilled/talented employees refer to the capability of the employees to make use technology in their workplace. The technology does not only help them in their workplace, but also improve working engagement and performance. Whereas top management support is considered as one of the critical success factors of digital workplace diffusion. Top management refers to the highest rank of executive that responsible for the entire organization. Without top management support, respondents claimed that implementation is useless and a waste of time. It also affects budgetary allocation, because transforming the organization into a digital workplace concept requires money.

6 Future Works

For future works, this research can extend the study on supporting factors towards digital workplace in public sector. The researcher can investigate top management support and skilled employee's effectiveness towards digital workplace diffusion in public sector. Furthermore, the researcher can also propose a conceptual framework of the digital workplace for the public sector.

7 Conclusion

Digital workplace has become the alternative way of working concept. Through digital workplace, employees operate remotely from each other and it will become common in the future [4]. Digital workplace environment concept is capable of improving employees' performances [5], agility [5], productivity [5], collaboration [20], engagement [21] as well as work-life balance [6]. The implementation of digital workplace technology can enable the public sector to compete with the private sector for workers, improve the satisfaction of their current workforces, provide better tools for employee engagement, and improve their ability to manage and develop their workforces. In addition, the increasing and more complex needs and expectations of customers will showcase the full implementation of the digital workplace concept, which is aligned with the needs of the smart communities.

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